

ABSTRACT

The invention relates to a process and a device (1) for combined current limiting and circuit breaking and to a switchgear assembly with such a device (1). In a combined current limiter-circuit breaker (1) as claimed in the invention, a movable electrode (3, 3') on the one hand for current limitation is guided automatically along one resistance element (5) for the current limitation path (31) by an overcurrent-dependent electromagnetic force (F_{mag}) and on the other hand for circuit breaking is moved into a series arrangement with an insulator (8). Embodiments include the following, among others: Use of the Lorentz force for automatic current limiting; movable electrode (3, 3') implemented by liquid metal (3) or movable solid-state conductor (3'); an electrical resistance (R_x) which increases nonlinearly in the direction of motion (x) for a gentle current limiting characteristic; and a resistance element (5) in the form of a dielectric matrix (5) with several channels (3a) for the liquid metal (3). Advantages are among others: arc-free, reversible current limitation and current interruption, also suited for high voltages and currents, fast reaction times, low wear, and ease of maintenance.

(Figure 1a, 1b)